

A Pollution Control Strategy for the Nanticoke River

Final Draft

October 2004

Nanticoke River Tributary Action Team

Overview

Total Maximum Daily Loads were established for the Nanticoke River Watershed in December 1998. The TMDL requires a 30 percent reduction in non-point source nitrogen load (from year 1992 base line). This will result in reduction of all nitrogen loads from 5013 pounds per day to 3799 pounds per day or a reduction of 1723 pounds of N per day. The TMDL also requires a 50 percent reduction in non-point source phosphorous load (1992 baseline). This will be a reduction in all phosphorous loads from 119 pounds per day to 79 pounds per day or a reduction of 40 pounds of P per day.

A public process to establish strategies to meet the load reductions began in spring 2000 with the establishment of the Nanticoke Tributary Action Team (TAT). The team had trouble gaining public attention for its early efforts --- few citizens attended its first forums. Some team members believed residents might not perceive the pollution problem as serious. In an effort to bring more attention to pollution problems in the Nanticoke Watershed, the team ran a series of full-page newspaper ads featuring informational articles about the problems and about the Tributary Team's efforts to solve them. The articles did generate more response, as more than 30 citizens attended the team's final forum on December 5, 2001.

Since the final forum, the team has ranked its priorities, had several educational meetings and worked through and revised numerous drafts of a Pollution Control Strategy. The TAT consisted of DNREC representatives, farmers, developers, town management, conservationists and residents with homes along the tributaries of the Nanticoke.

Common Ground

Members of the watershed community who participated in the public forums found common ground on the core values to anchor their work in the formation of Pollution Control Strategies:

- **We will be fair and equitable**
- **We will consider both individual rights and responsibilities and the public good**
- **We will clearly articulate intent and purpose.**

Guiding Principles

Forum participants identified and deemed important overarching principles that go beyond the scope of a nutrient reduction strategy. Awareness and consideration of these principles will be critical for successful adoption of a pollution control strategy.

- **Ensure concurrence of policies, laws and regulations among all levels of government.**

A higher level of government accountability is necessary if nutrient reductions are to be affected. There exist numerous instances of government inconsistencies and lapses in application and enforcement of policies, laws and regulations.

- **Develop an aggressive public policy of incentives to encourage/ensure TMDL compliance.**
Cooperation, ingenuity and pragmatism will be essential for successful implementation of Pollution Control Strategies. Incentives are a successful, long-standing tool to promote those elements.
- **Education needs to be applied “across the board.”**
Any person living, working, recreating in the watershed needs to understand how the watershed works and the potential impact of their actions. Education remains the primary tool in any effort to help individuals do the right thing.
- **Adapt to changes in scientific knowledge but do not allow the need for scientific certainty to prevent action from taking place immediately.**
In our rapidly changing world, we see more and more where policy and science do not agree. How much science is enough? When do we really know what the right thing to do is? We see this as a very important issue in this watershed where significant pollution loading comes from non-point sources. We also acknowledge things can be done.

Pollution Control Strategies

I - On-site Wastewater Disposal Systems

Discussion:

DNREC estimates that as much as 16 percent of the non-point source nitrogen and 25 percent of the non-point source phosphorus entering the Nanticoke River originates from on-site wastewater systems. Seventy-three percent of these systems exist on soils associated with water tables shallower than four feet. Near the Nanticoke main stem and Broad Creek, predominantly sandy soils “cannot retain much nitrogen or phosphorus, so nutrients have a better chance of seeping into groundwater and ultimately surface water” (DNREC, 2002).

Proximity of on-site wastewater systems to surface water is also shown to be associated with nutrient loading potential. On-site wastewater systems that exist closer to surface waters are estimated to discharge more pollutants to waterways since there is less space and time for nature to assimilate nutrients. According to DNREC, “within 500 feet, on-site wastewater systems may virtually feed their effluent into the surface waters.”

<i># of Feet from Surface Water</i>	<i># of On-site wastewater systems (total estimated at 15,000)</i>
250	2,550 (17%)
500	5,700 (38%)
1,000	10,650 (71%)

DNREC suggests that regular 3-year on-site wastewater system pump outs (costs estimated at \$175 per pump out) can reduce phosphorus loading to the watershed by 48 percent. Use of alternative on-site wastewater systems in place of standard gravity units has been demonstrated to reduce nutrient discharges up to 60 percent.

The significant amount of nutrient pollution associated with on-site wastewater system discharges in the Nanticoke River Watershed must be aggressively managed.

Recommendations:

- **On-site wastewater disposal systems must be maintained according to Delaware guidelines and regulations**
- **Develop criteria that define a viable on-site wastewater system.**
- **At time of property transfer, the on-site wastewater system must be inspected for viability. Failing systems must be repaired, replaced or upgraded to meet standards.**
- **New or replacement on-site wastewater systems must achieve a 50 percent reduction of nitrogen based on the norm of a “standard” on-site wastewater system beginning January 2008. All existing systems must meet the 50 percent reduction standard by January 2018.**
- **Offer incentives and financial assistance when appropriate to encourage early program compliance.**

II – Agriculture

Discussion:

Programs - We recognize agriculture as by far the largest user of the land in the watershed. We acknowledge the many agriculture programs in the watershed including EQIP, Conservation Reserve Program, Conservation Reserve Enhancement Program, Nanticoke River Public Law (PL) 566, the impending Broad Creek PL 566 Conservation District cost-share programs and a multitude of other programs focused on conservation and management practices. We see the Delaware Nutrient Management program and components including manure generator and applicator certification, manure re-location, and education as a critical element in preserving working agricultural lands in the watershed. Scientific contributions such as the introduction of the phytase enzyme as a feed additive accelerate the reduction of nutrients in the watershed. Phytase maximizes the usage of dietary phosphorous by the bird and has the potential to reduce significantly the phosphorous load in the watershed.

Cover crops - Much of the Nanticoke Watershed lies in Sussex County, Delaware where more broiler chickens are produced than any other county in the country. Grains grown in the region benefit from broiler production because the manure produced by poultry is applied to farm fields as fertilizer. Recent data suggests that manure applications exceed the ability of crops to uptake the associated nutrients on many farm fields. As much as 25 percent of nitrogen remaining in soil three years after it is applied is lost through volatilization, leaching and runoff (University of Maryland, 2002). Cereal grains like winter wheat, annual rye, barley and triticale are widely used in Maryland and other mid-Atlantic states to scavenge excess nitrogen from farm fields after warm season corn and soybean crops have been harvested. Data collected by mid-Atlantic universities scientists verifies that for each acre planted in cereal grain cover crops planted in the fall, approximately 25 pounds of nitrogen are removed from the soil and thus from the ground water. Cover crops have also been shown to reduce soil erosion from wind and water, increase soil organic matter and improve soil structure.

Farmers recognize the value of cover crops; however, management costs often exceed profit margins of most grain operations. Current cost estimates for managing cover crops

are \$25 per acre. Since the planting of cover crops accomplishes nitrogen removal at an approximate cost of \$1 per pound, this best management practice is one of the most cost effective control strategies available.

Cover crops grown on 26,000 acres of farmland in the Delaware portion of the Nanticoke Watershed could exceed the non-point source nitrogen reduction target of 1,723 pound of nitrogen per day. However, without adequate cost-share assistance, the economic return for individual farmers planting cover crops is minimal.

Recommendations:

- **Develop and implement a voluntary cost share program that provides farmers funding to offset the costs of planting and managing cover crops. The program will be in accordance with established guidelines. Agriculture Best Management Practice (BMP) implementation goals should focus on increasing acres in cover crops and include a commodity cover crop program (where farmers can fertilize and sell the crop).**
- **Encourage agricultural producers, suppliers, integrators and others in the industry who live and work in the watershed to take full advantage of all programs, particularly those focused on reducing the potential of nutrient degradation of ground and surface waters.**
- **Characterize buffer strips by performance and compensate those who use them accordingly.**
- **We recognize the appeal of buffer strips, but are wary of recommending a blanket statement of support. While buffer strips do remove nutrients from runoff, the nature of topography, width of the buffer and soil type are all factors in nutrient uptake. We support buffers in principle, but suggest more work in making buffers site specific be done.**
- **The County and State should coordinate their efforts to preserve working lands in the watershed. These lands provide water quality and quantity benefits when tended responsibly.**
- **Agriculture Best Management Practice (BMP) implementation goals should include a combination of practices that minimize the acreage taken out of production.**
- **Agriculture Best Management Practice (BMP) implementation goals should emphasize the use of water control structures (structures that control water while reducing the nitrogen content of the water).**

III - Tributary Action Team

Discussion:

Citizens of the watershed, those ultimately impacted by pollution control strategies will need time to understand the challenges facing the Nanticoke River. While DNREC and others have technical expertise, there is no substitute for homegrown wisdom. When people come together to work on something in which they have a common interest, good things happen.

Interested citizens of the watershed, not unlike those who devoted their time and talent to the development of these Pollution Control Strategies, should form a working group

sometimes called a tributary action team (TAT) for the Nanticoke Watershed. The group should consider the following as suggested functions:

- Facilitate learning for all who use the watershed
- Monitor overall progress toward implementation of Pollution Control Strategies
- Respond to DNREC comments to the Pollution Control Strategies
- Represent a collective voice that recognizes the challenges and opportunities in the Nanticoke Watershed.
- Act in an advisory capacity during policy development and implementation.
- The Nanticoke TAT could by default become an existing organization in the watershed such as the Nanticoke Conservancy, Nanticoke Watershed Alliance or the Nanticoke River Preservation Group.

Recommendation:

- **Establish and initially support a standing tributary action team for the Nanticoke Watershed.**

IV—Stormwater and Development

Although the Nanticoke Watershed is primarily agricultural, growth is occurring. The major cities and towns of Seaford, Bridgeville, Laurel and Delmar are attracting more residents and businesses as people recognize the beauty of the Nanticoke River, its tributaries and the land of the coastal plain. As land converts from agriculture to residential and other urban land usage, laws and policies should be in place to protect the water from additional pollutants, especially nutrients.

Recommendations:

- **Development activities shall be managed for nutrient reductions consistent with TMDL load reductions, or shall utilize ‘best available technologies’ (BATs) in the project design where TMDL load reductions are not feasible.**
- **Site specific, streamside vegetated buffers should be encouraged in new developments through ordinances, regulations, open space designation, and incentives as well as a targeted outreach/education program.**
- **An impervious cover limit of 20% is needed to protect water quality for areas outside the designated growth areas. Suggestions and incentives for the use of alternative pervious materials and strategies (to take the place of traditional impervious ones) for sidewalks, parking lots and roadways will be provided to developers by all governmental entities. Once the project reaches 20% impervious coverage, these entities will require the use of these alternative pervious materials and technologies.**
- **The County and State should collaborate to define the concept of “conservation design” and enact codes and regulations and create incentives that allow for and promote “conservation design” principles with a goal of reducing nutrient loads. Conservation design principles include practices**

that reduce surface water runoff of nutrients, such as those that promote infiltration, narrower roads and sidewalks, swales and grassed waterways, water use conservation, recycling, natural resource protection, open space preservation, and park creation, among other practices.

- **Require that stormwater facilities be designed to achieve the TMDL required nutrient load reductions or be designed to use proven best available technologies to reduce nutrient loads to the nearby waters.**
- **Develop a program or means to provide outreach/education to homeowners served by a stormwater management facility who are required to maintain the facility. This effort should assist homeowners' associations in the development of a maintenance plan as well as to establish a funding mechanism to meet financial obligations for related stormwater facility maintenance.**
- **A representative workgroup composed of community members, District, Municipal, County, and State government shall collaborate to establish a stormwater retrofit process for the Nanticoke River Watershed so that communities built before 1991 can reduce the quantity of nutrients that they deliver to the streams.**